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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,698	12/18/2001	Nicholas J. Heaton	20.2786	3240

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EXAMINER

VARGAS, DIXOMARA

ART UNIT PAPER NUMBER

2859

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,698

Applicant(s)

HEATON ET AL.

Examiner

Dixomara Vargas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) Z.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 9-15, 17-23, 25-29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Coates et al. (US 5,696,448).

With respect to claims 1, 9 and 18, Coates discloses a method for determining a molecular property of each constituent in a mixture of hydrocarbons comprising (Abstract): deriving at least one dynamic parameter to each constituent in the mixture from NMR data measured on the mixture (Abstract) and calculating the molecular property for the each constituent in the mixture from the at least one dynamic parameter for each constituent (Column 14, lines 11-17).

3. With respect to claims 2, 10 and 19, Coates discloses generating a model that includes a plurality of components for the constituents of the mixture and iteratively modifying the model components to optimize the model with respect to the NMR data (Column 3, lines 21-23).

4. With respect to claims 3, 11 and 20, Coates discloses the dynamic parameter comprises one selected from a longitudinal relaxation time, a transverse relaxation time, a ratio of longitudinal and transverse relaxation times and diffusion rate (Column 3, lines 24-38).

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5. With respect to claims 4 and 12, Coates discloses the mixture of hydrocarbons is disposed in a geological formation (Column 3, lines 16-20).
6. With respect to claims 5, 13, 21 and 27, Coates discloses correlating the at least one dynamic parameter of the each constituent with effective viscosity of each constituent (Column 3, lines 16-20).
7. With respect to claims 6, 14, 22, 28 and 31, Coates discloses deriving empirical parameters from a suite of hydrocarbon samples (Column 3, lines 16-20).
8. With respect to claims 7, 15, 23 and 29, Coates discloses the suite of hydrocarbon samples comprises crude oils (Column 14, lines 11-17).
9. With respect to claims 17 and 25, Coates discloses using one tool selected from a wireline NMR tool, a logging while drilling NMR tool, and a modular formation dynamics tester or a laboratory NMR instrument (Figures 1-4).
10. With respect to claim 26, see rejection of claims 1 and 3 above in paragraphs 3 and 5.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 8, 16, 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coates et al. in view of Tutunji et al. (US 6,337,568).

With respect to claims 8, 16, 24 and 30, Coates disclose the claimed invention as stated above in claims 1-7, 9-15, 17-23, 25-29 paragraphs 3-11 except for the step of using a neural network. However, Tutunji discloses the use of the neural network (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Tutunji's neural network with Coates NMR logging system for performing the method of determining the molecular property of the hydrocarbons for the purpose of further enhancing the resolution of a particular log measurement since it can be used to generate finer resolution data by the computer simulation that produces output based on available log measurements, human knowledge, and other factors.

Response to Arguments

14. Applicant's arguments filed October 14, 2003 have been fully considered but they are not persuasive. Applicant argues that the prior art fails to teach the "molecular properties" such as molecular size and weight distribution and carbon number distribution determined from T₁ and T₂ or diffusion measurements.

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15. The applicant's arguments are not persuasive because the prior art discloses the diffusion of hydrocarbons, which is a molecular compound of oxide and carbon or other molecular compounds in the geologic formation (Columns 3 and 8, lines 8-44 and 25-33 respectively); and the molecular weight of the hydrocarbons (Column 17, line 3). Also, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., molecular size and weight distribution and carbon number distribution determined from T_1 and T_2 or diffusion measurements) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (703) 305-5705.

The examiner can normally be reached on 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Dixomara Vargas
Art Unit 2859
December 2, 2003



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800